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NEUROLOGICAL PICTURE

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Checkerboard fields in multiple sclerosis

A 43 year old previously healthy woman presented with headache and blurred vision. Visual acuity was 20/30 in both eyes, with normal colour vision, pupil, and funduscopic examinations. Computerised threshold perimetry (fig 1) revealed a left superior and right inferior homonymous quadrantanopia. Magnetic resonance imaging (MRI) of the brain demonstrated high signal abnormality in the right temporal and left parieto-occipital lobes (fig 2). A diagnosis of multiple sclerosis (MS) was established when the patient developed recurrent neurologic dysfunction.

Crossed quadrant hemianopias are rare field defects that are usually secondary to ischaemia and are typically attributed to bilateral injury to the calcarine fissure. Such defects are uncommon since bilateral quadrantopias secondary to vascular disease are usually either both superior or inferior, owing to watershed ischaemia or embolic disease. From 1891 to 1994 only nine cases with crossed quadrant field defects were reported worldwide and no-one suffered from MS.[1] In 1995, the first report of crossed quadrant hemianopia occurring in a patient with clinically definite MS was documented to be secondary to lesions in the trigone areas bilaterally.[2] We are not aware of any further reports of checkerboard field defects since 1995. In our patient, crossed-quadrant field defects resulted from bilateral lesions in the optic radiations. The demyelinating lesion in the right temporal lobe produced the left superior quadrantanopia, while the lesion in the left parietal area produced the right inferior quadrantanopia. Furthermore, our patient demonstrates that a crossed quadrant field defect may rarely occur as an initial manifestation of MS.

Symptomatic homonymous field defects in MS are uncommon, and may be related to the large retrochiasmal lesions required to produce them and the tendency for rapid recovery in the vast majority of cases. Another factor that may limit the occurrence of homonymous field defects in MS is the tendency for lesions to occur along venules and non-fibre tracts.[3] The chances of a checkerboard field defect appearing in MS are reduced by: (1) the rarity of the homonymous defects in this condition; (2) the necessity for bilateral field defects; (3) the occurrence of quadrantanopic defects rather hemianopic ones; and (4) the need to have one lesion above and one lesion below the representation of the horizontal meridian.

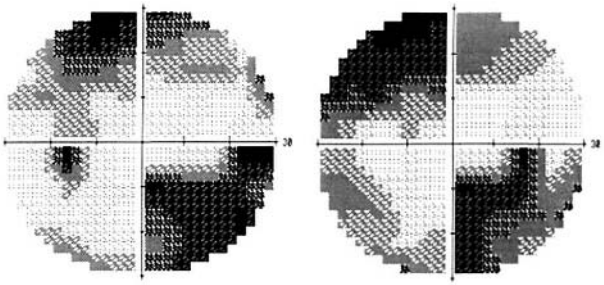

Figure 1 Humphrey visual fields [30-2] demonstrate a left superior and right inferior quadrantanopia consistent with a crossed quadrant pattern of field defects.

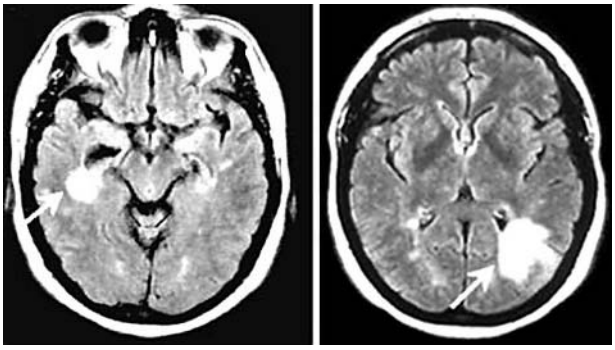

Figure 2 Axial sections of brain MRI. Fluid attenuation inversion recovery [FLAIR] images demonstrate high signal abnormality (arrows) in the right temporal region and left parieto-occipital area, which account for the corresponding field defects.

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